



# ACSM/DOD Conference

## Prevention of EHI

Michael S. Ferrara, Ph.D., ATC, FNATA

University of Georgia

Dept. of Kinesiology



Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE <b>23 OCT 2008</b>		2. REPORT TYPE <b>N/A</b>		3. DATES COVERED <b>-</b>	
4. TITLE AND SUBTITLE <b>Prevention of EHI</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>University of Georgia Dept. of Kinesiology</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release, distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>American college of Sports Medicine (ACSM/DOD)roundtable Conference, 22-23 Oct 2008., The original document contains color images.</b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>UU</b>	18. NUMBER OF PAGES <b>17</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			



# Goals

- EHI Factors
  - Cumulative Effect
  - Role of the Environment - WBGT
- Clinical Implications



# NCAA Regulations - 2003



- Five-day acclimatization period for all football athletes.
  - Only one on-field practice per day during the first five days.
  - Days 1 and 2: helmets.
  - Days 3 and 4: helmets and shoulder pads.
  - Day 5: full pads.



# NCAA Regulations - 2003

- Day 6 and on: full pads, but must alternate single and double session days
  - Maximum of three hours of on-field practice on single session days
  - Maximum of five hours daily on multiple session days.
    - On multiple session days, three hour recovery must separate sessions. Team meetings not allowed during this time.



# Participation by Region





# When do EHI Occur?

Practice Days	All EHI Cases	Heat Exhaustion
1-5 days	39%	31%
1-10 days	61%	61%
1-16 days	75%	78%
1-24 days	85%	86%



# Overall Injury Rates

EH	Total
Heat Cramps	489
Heat Exhaustion	166
Total	655
No. Exposures	449578
Injury Rate/1000 AE	1.46
Heat Exhaustion Injury Rate	0.37

**No Reported Exertional Heat Strokes**

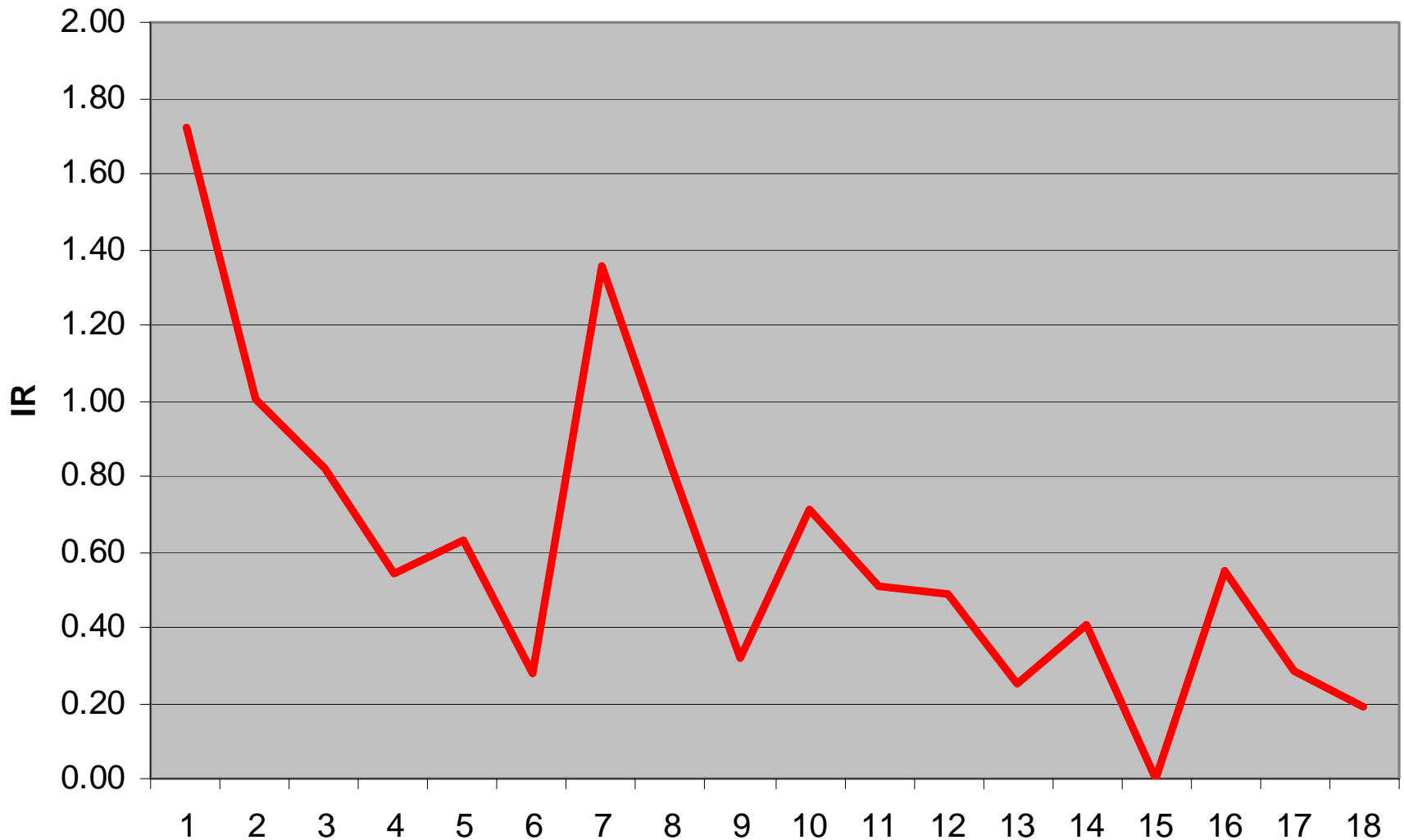


# Injury Rate by Region

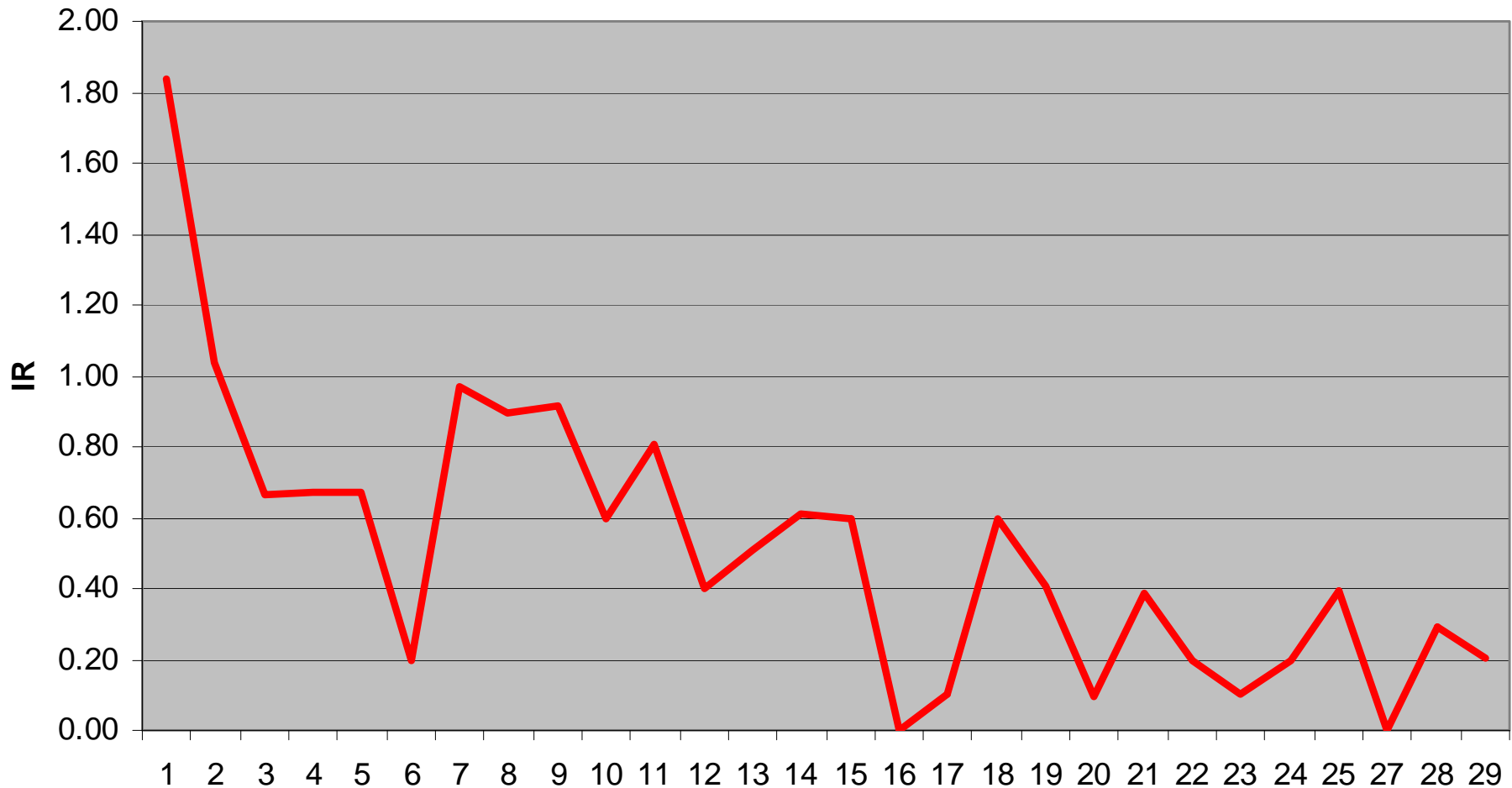
Region	Heat Cramps	Heat Exhaustion	Total	Exposures	Injury Rate
NE	27	17	44	74896	0.59
SE	397	116	513	166898	3.07
UMW	29	14	43	64075	0.67
LMW	21	15	36	55539	0.65
NW	13	4	27	67186	0.25
SW	2	0	2	20984	0.10
Total	489	166	655	449578	1.46

# Injury Rate by Practice Day

## Heat Exhaustion

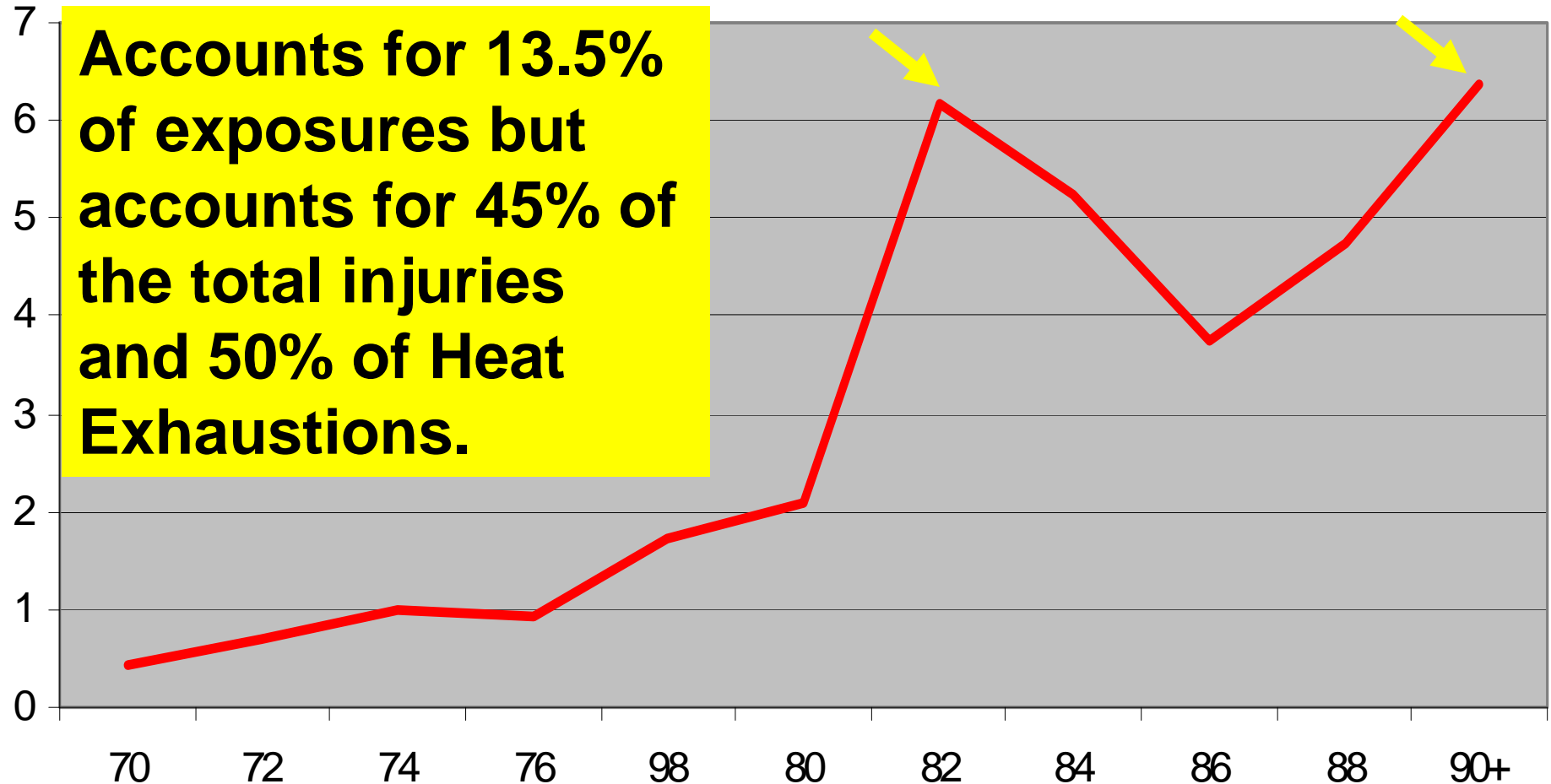


# Injury Rate by Pre-Season Session Number- Heat Exhaustion



# Injury Rate by WBGT

## All Cases



# Revised ACSM Scale, 2007



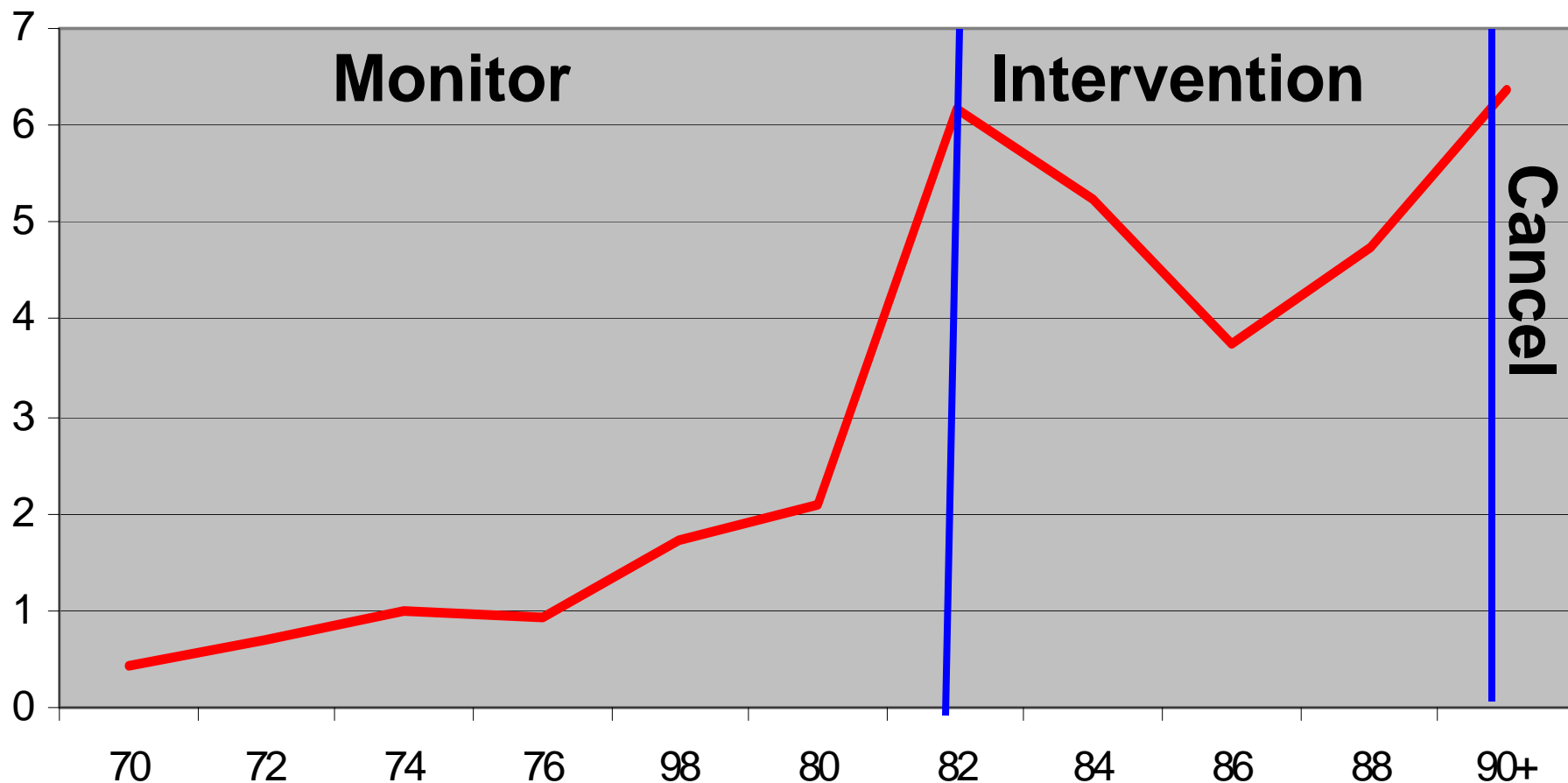
## WBGT

## Acclimated

$<82^{\circ}$	Normal activity, monitor fluid intake
$82.1^{\circ}-86^{\circ}$	Plan intense or prolonged exercise with discretion, watch at-risk individuals
$86.1^{\circ}-90^{\circ}$	Limit intense exercise and total exposure to heat and humidity. Watch for early S&S of EHI
$>90^{\circ}$	Cancel exercise, uncompensable heat stress exists for athletes.

# Injury Rate by WBGT

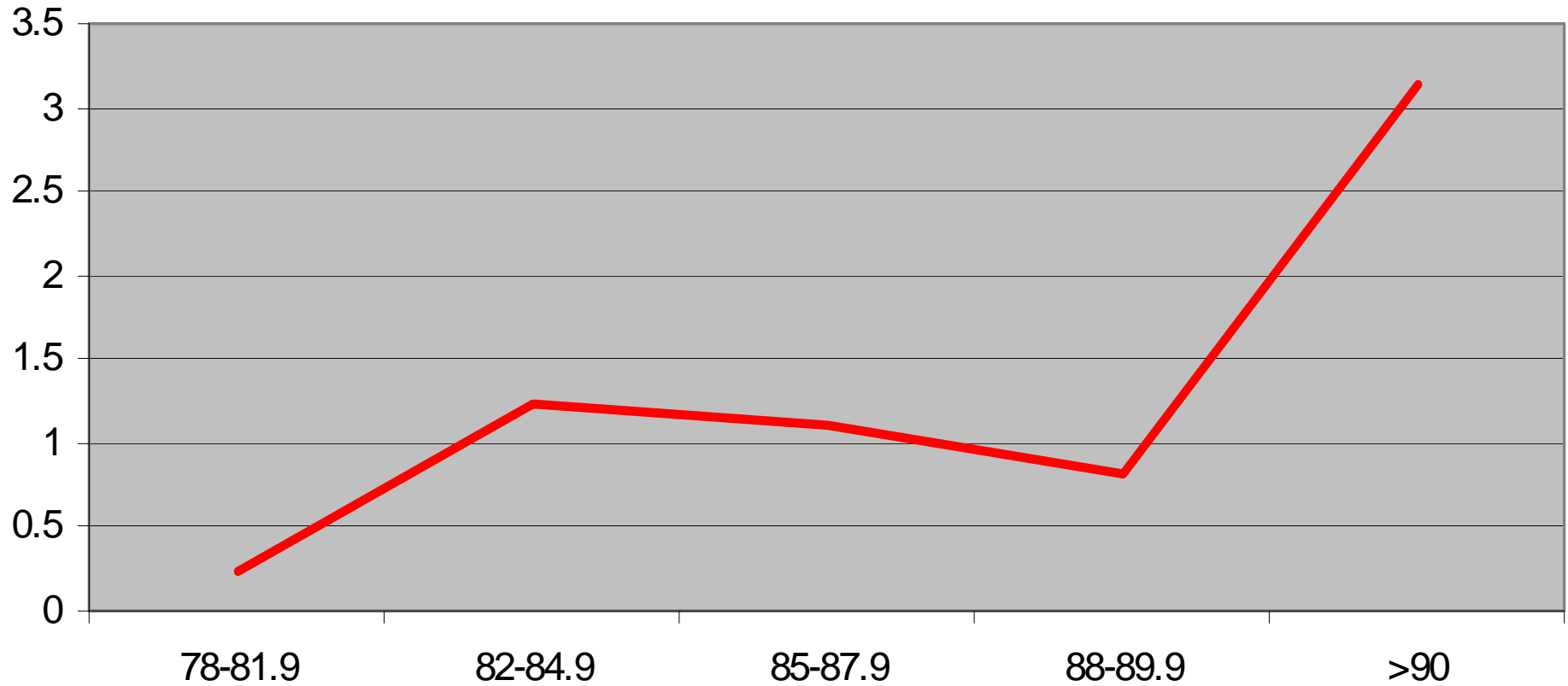
## All Cases



# Injury Rate by Work:Rest Guide



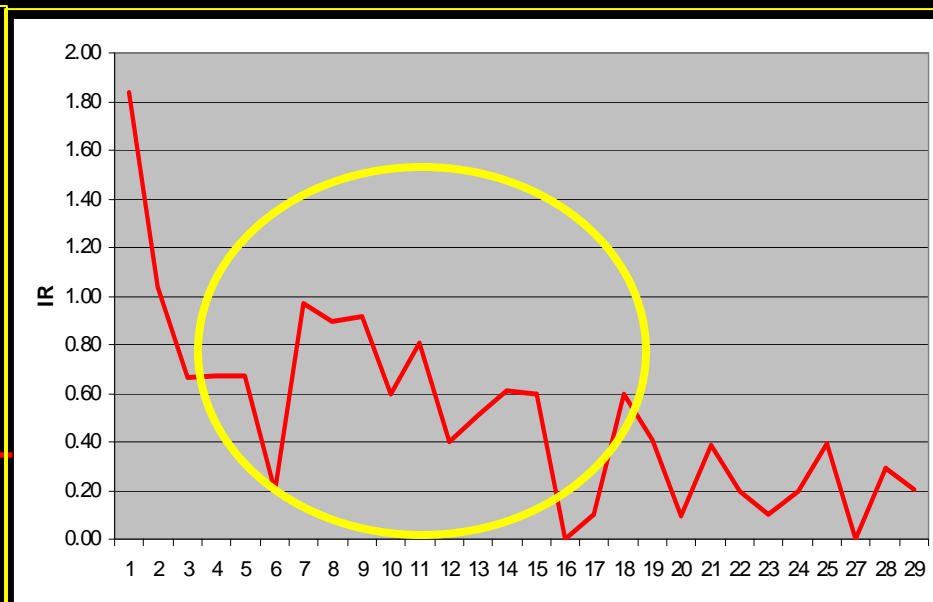
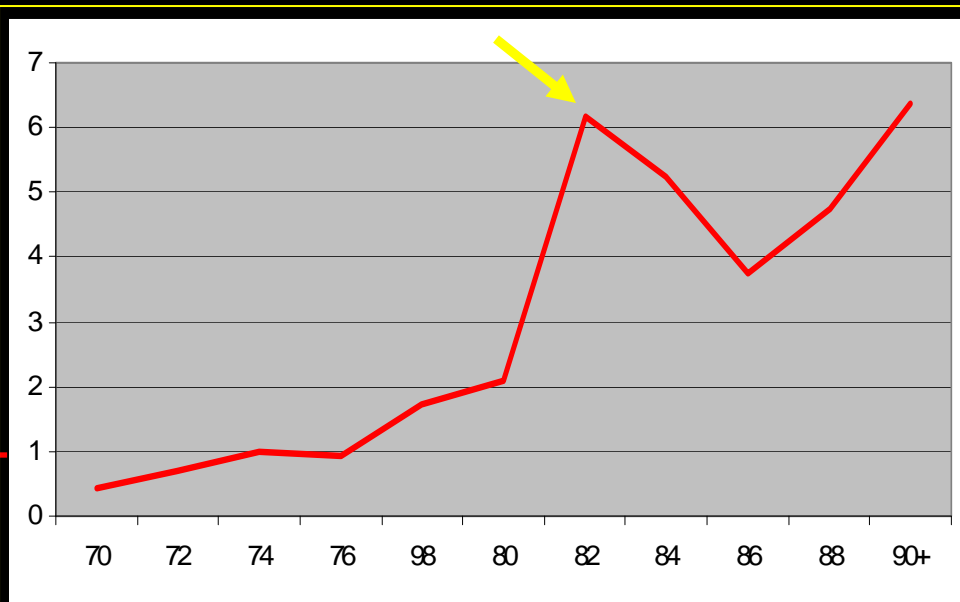
HE Rate





# EHI Prevention - Environment

- EHI risk increases at:
  - ~82°F WBGT
  - Risk of EHI rises exponentially as the WBGT increases
- Cumulative Risks





# Common Sense

- Fitness Level
- Acclimatization
- Overachiever
- Supplements
- Nutrition
- General Medical Condition
- Sickle Cell Trait
- Weight Loss



# THANK YOU



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